EFFECT OF PRANAYAMA ON PSYCHO-PHYSIOLOGICAL ASPECTS AND PERFORMANCE ABILITY OF STATE LEVEL SWIMMING PLAYERS

A RESEARCH PROPOSAL

SUBMITTED TO THE
SWAMI RAMANAND THIRTH MARATHWADA UNIVERSITY,

NANDED

FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY
IN PHYSICAL EDUCATION

BY

PANDIT PRABHAKAR ABAJI

Under the Guidance of

DR. B.N. YADAV

Head Dept. Physical Education

B. S. COLLEGE BASMAT

DEPARTMENT OF PHYSICAL EDUCATION
S.R.T.M. UNIVERSITY, NANDED

Oct. 2017

INTRODUCTION

For success in swimming, one requires muscular strength, agility, flexibility, cardiovascular endurance, presence of mind, neuro-muscular coordination skill and courage is essential. In this context, the researcher being a Kabaddi player sought to determine the effect of Pranayama on respiratory functions of swimming players. Practice of Pranayama has a better chance of gaining the ability to control the breathing problems. With the help of yogic breathing techniques, it may be possible to control attack of shortness of breathing. Moreover, various studies have confirmed beneficial effect of yoga.

Statement of the Problem

studies on the psycho-physiological demands in swimming are scanty. Although there are some studies in relation to swimming players (De *et al*., 1979; De *et al*., 1982; Dey*et al*., 1993) however, a systematic evaluation of the psycho-physiological and physical performance demands of this sport has not yet been undertaken in an organized way.

Hence, the researcher sought to determine whether the Indian traditional yoga practices could improve some of these major qualities in swimming players

Problem and its Relevance

A sport, like swimingi, requires maximum strength, stamina, fitness and breath holding capacity. As the player or swimre has to hold the breath while swimming . the pre-competitive anxiety, a normal phenomenon, associated with increased breath-rate further might hamper the breath-holding capacity of a player. Thus breath control plays an important role in achieving success. By controlling the act of breathing, one can efficiently control all the various motions in the body and the different nerve currents that are running through the body (Sivananda,1971). So more the control over breath, more is the steadiness of mind and better is the performance.

Objectives of study

This investigation has been conducted with the following objectives in perspective:

- To assess the selected attributes of pulmonary function along with associated physiological variables of the swimming players.

- To measure type of personality of elite swimming players.
- To assess selected performance variables along with *swimming ability* as required for swimming players.
- To prepare specific pranyama training schedule considering the enhancement of the selected psycho-physiological variables, and performance ability of swimming players.
- To conduct a controlled experiment for evaluating the efficacy of specific pranayama training schedule on the selected variables so as to exhibit top performance in swimming.

Hypothesis

H_1: The stimulus of pranayama may be effective in improving personality of State level swimming players.

H_2: The pranayama training would help to improve body mass index of the swimming players.

H_3: The stimulus of pranayama may be effective in improving physiological variables of State level swimming players.

H_4: The selected training would be beneficial to enhance the performance abilities of swimmingi players

Delimitation of the study

- This study will be delimited to selected pranayama techniques.
- This study will be delimited to State level male/ female swimming players with age group 18 to 22 years.
- The major variables on pulmonary function and associated physiological variables, personality and performance ability viz., grip strength, agility, endurance and cant ability will be delimited for data collection.

Limitations

- Since the subjects are not residing in the hostel; it was not possible to control their day to day activities.
- Diet plays an important role for improving one's growth, development as well as psycho-physiological responses, which can not control in this experiment.

The subjects of both experimental and control group are totally ignorant and had no background of yoga practices. But the investigator will take care of making the experimental aware of every possible aspect of yoga and for this much time will spent for learning aspect rather than training. Therefore, expected outcomes due to training might be incur.

Significance of the study

Pranayama may bring favorable changes in selected psycho-physiological attributes and performance components including breath holding capacity and cant ability of the swimming players.

The newly designed pranayama training schedule, as a result of this study, may be beneficial for the Indian swimming players participating in national and international swimming competitions.

Professional coaches or sports trainers may introduce pranayama in the training schedule of the swimming players for enhancing top performance.

Brief review of the literature.

The researcher has searched various electronic databases and libraries to find out related studies. However, there are very few studies conducted on this topic. Nevertheless, as the purpose of this study is to see the efficacy of pranayama on psycho-physiological aspects and performance ability of state level Kabaddi players, research reports in brief are presented in this chapter

Methodology

To test the above referred hypotheses, sixty elite male swimming players (n = 60), age: 18 to 25 yrs., from Nanded and Parbhani District, were selected randomly as sample by employing Fishers Random Table. Making use of table random numbers all the 60 subjects were divided randomly into two groups viz; Group –A (Pranayama; ; n_1 = 30) and Group – B (Control; ; n_2 = 30) with equal in numbers.

The design of the experiment has been planned in three phases – Phase – I: Pretest, Phase- II: Training or Treatment, and Phase- III: post test. After the pre test on the selected variables (height, weight, BMI, vital capacity, PEFR, breath holding capacity, blood pressure, pulse rate, personality, cant ability, grip strength, endurance, and agility) was over, all the subjects of experimental group were exposed to eight weeks training of selected pranayama practices for one hour daily in the morning except Sundays and Holidays. Every day after completion of training the subjects of the experimental group were exposed to regular practice of Kabaddi daily for one hour. The controlled subjects, although did not receive the above mentioned training, however, were kept busy with some recreational activities one hour daily in the morning except Sunday and holidays during the total period of experiment. After completion of daily one hour controlled period the subjects of the control group were exposed to regular practice of Kabaddi daily for one hour. For a total period of eight weeks, one yoga teacher was appointed to conduct the specially designed pranayama training intervention under the overall supervision of present investigator. The schedule of pranayama practices was finalized in consultation with the experts. Finally, when the treatment or training period of eight-week was over, the post-test on psycho-physiological aspects and performance in Kabaddi was conducted for all the subjects of both the control and experimental groups.

Selection of variables and tools

The investigator reviewed various scientific literatures pertaining to the effect of yoga practices on selected psycho-physiological variables from books, journals, periodicals, magazines, research papers etc. Taking into consideration of feasibility criteria, availability of instruments and the relevance of the variables of the present study, the following variables will be selected and appropriate tools will be used (Table I).

Mesurementr variables

Sr. No.	Name of Variables	Tools/ Method used	Criterion Measures
A)	**Morphological Aspects**		
01	Height	Stadiometer	Nearest to 0.005 M.
02	Body weight	Weighing machine	Nearest to 0.5 Kg.

03	BMI (Body Mass Index)	Formula with the scores of body height and weight	Nearest to 0.01 Pt.
B)	**Physiological Aspects**		
04	Vital Capacity	Spiro Meter	Nearest to 0.05 Lit./min.
05	PEFR	Peak flow meter	Nearest to 0.05 Lit./min.
06	Breathing Holding Capacity	Stop Watch	Nearest to 0.05 Sec.
07	B.P. (Blood Pressure)	Sphygmomanometer	Nearest to 1 mmHg
08	Pulse Rate	Feeling of pulse and use of stop watch	Nearest to 1 beat/ min

Psychological		
Personality	Personality test	Nearest to 1 point
Performance in Kabaddi		
Cant Ability	Stop Watch	Nearest to 0.05 Sec.

Grip Strength	Grip Dynamometer	Nearest to 0.5 Kg.M
Endurance	1 mile run & walk	Nearest to 0.05 Sec.
Agility	10 x 10 M run	Nearest to 0.05 Sec.

Schedule of yoga training

The weekly schedule of training intervention has been presented (Table II)

1st & 2nd Week	3rd & 4th Week	5th & 6th Week	7th & 8th Week
Shavasana	Shavasana	Shavasana	Shavasana
Crocodile (4)	Paschimottanasana	Sarvangasana	Sarvangasana
Ardhahalasana	Naukasana	Matsyasana	Matsyasana
Coordination	Vparitakarani	Yogmudra	Yogmudra
Niralambasana	Matsyasana	Ujjayi	Ujjayi
Naukasana	Ujjayi	Bhastrika (25-40) 2	Bhastrika (40) 2
Sarpasana	AnulomaViloma 10	Om Recitation (3)	Om Recitation (3)
Paschimottanasana	Kapalbhati (10-30)	Sit silently (breathing awareness for 5 mins.)	Sit silently (breathing awareness for 5 mins.)
Vrikshasana	Bhastrika (5-25) 2		

Deep Breathing (10)	Bharamari (5-10)
AnulomaViloma (2-10)	Om Recitation (10)
Kapalbhati (5-10)	Sit silently (breathing awareness for 5 mins.)

Statistical Analysis

Descriptive statistics was applied to process the data. Further, the efficacy of the pranayama training to the experimental group as compared to the control group on the 12 variables during pre- and post-test was evaluated by employing inferential statistics i.e., 2 x 2 x 12 Factorial ANOVA. The results of factorial ANOVA were then substantiated to *Scheffe's post hoc* analysis.

Selected references

Akkus, H. (2012). Kinematic analysis of the snatch lift with elite female weightlifters during the 2010 World Weightlifting Championship. *Journal of Strength and Conditioning Research/ National Strength and Conditioning Association, 26*(4), 897-905.

Alaraj, A. M., Chamoun, R. B., Dahdaleh, N. S., Haddad, G. F., & Comair, Y. G. (2005). Spontaneous subdural haematoma in anabolic steroids dependent weightlifters: reports of two cases and review of literature. *Acta Neurochir (Wien), 147*(1), 85–87.

Al-Bilbeisis, F., & McCool, F. D. (2000). Diaphragm recruitment during nonrespiratory activities. *Am J. Respir. Crit. Care. Med., 162*(2 Pt1), 456 – 459.

Bal, Baljinder Singh. (2010). Effect of anulom vilom and bhastrika pranayama on the vital capacity and maximal ventilator volume. *Journal of Physical Education and Sports Management*, *1*(1), 11-15.

Balakrishnan, A., & Krishnaswamy, S. (2011). Effect of combined action of yogasanas and pranayama exercises reduces lipid profiles and enhances antioxidant Status\in young healthy individual. *The Shield-The International Journals of Physical Education and Sports Science, 6,* 83-102.

Chatterjee, Satipati., Chatterjee, Partima., & Banddyopadhay, Amit. (2005). Validity of Queen's college step test for estimation of maximum oxygen uptake in female student. *Indian J Med Red., 121*, 32-35.

Fitzsimmons, P. A., Landers D. M., Thomes, S. R., & Marsh, Van Der. (1991). Does self-efficacy predict performance in experienced weightlifters?. *Research Quarterly Exercise and Sports, 62*(4), 424-431.

Greer, M., Dimick, S., & Burns, S. (1984). Heart rate and blood pressure response to several methods of strength training. *Phys Ther, 64*, 179-183.

Haghravan, J. (1993). Surveying validity of 600yard test and step test in measuring cardiorespiratory fitness of students. M. A. Final thesis. Tarbiat Moallem University.

Johnson & Arthur, Charles. (1991). The comparison of measured and predicted maximum oxygen uptake in weightlifters. *Completed Research in Health Physical Education and Recreation, 33*, 127.

Joshi, L. N., Joshi, V. D., & Gokhale, L. V. (1992). Effect of short term 'Pranayam' practice on breathing rate and ventilator functions of lung. *Indian J Physiol Pharmacol., 36*, 105-108

Lolage, R. S., & Bera, T. K. (2002). Effect of pranayama on cardiovascular endurance in Kho-Kho players. *Yoga- Mimamsa, 34*(1), 13–26.

Madanmohan, Thombre D. P., Balakumar, B., Nambinarayanan, T. K., Thakur, S., Krishnamurthy, N., & Chandrabose, A. (1992). Effect of yoga training on reaction time, respiratory endurance and muscle strength. *Indian J Physiol Pharmacol., 36*, 229-233.

Rajapurkar, M. V. (1999). Pranayama modulator of cerebral functions (A Hypothesis). *Yoga-Mimamsa, 33*(4), 42–60.

Rastogi, Dolly., Saxena, Jalaj., Bhagat, Anumeha., Mishra, Shashi Bushan, Rastogi, Munish., & Saxena, Sonali. (2007). Effect of pranayama on pulmonary function tests and breath holding time in male medical students. *Indian Journal of Community Health*, *19*(1), 39-41.

Pandit Prabhakar Abaji

Research scholar

Dr. B. N. Yadav

Research Guide

Head, Department of Physical Education ,

B.S. COLLEGE BASMATH